What is claimed is:

1. A method for providing quality of service (QoS)-driven channel access within a basic service set (BSS) in a wireless network, the method comprising steps of:

sending a contention control (CC) frame from a point coordinator (PC) of the BSS, the CC frame containing information relating to at least one of a priority limit for a next centralized contention interval (CCI), a length of the next CCI , a permission probability associated with the next CCI and information relating to a reservation request (RR) frame successfully received by the PC in a previous CCI; and

receiving a non-colliding RR frame at the PC in the CCI following the CC frame, a received RR frame being sent from a non-PC station in the BSS when at least one centralized contention opportunity (CCO) is available during the CCI after the CC frame, and an RR frame indicating that the non-PC station sending the RR frame has at least one buffered data frame for transmission.

2. The method according to claim 1, wherein the buffered data frame at a non-PC station is classified to one of a virtual up-stream and a virtual side-stream (VUS/VSS) sourced by the non-PC station and has a priority level contained in a QoS parameter set characterizing the VUS/VSS; and

wherein the data frame is associated with a virtual stream identifier (VSID) assigned for the VUS/VSS when the VUS/VSS is admitted to the BSS.

3. The method according to claim 1, wherein the buffered data frame at a non-PC station belongs to best-effort/asynchronous traffic from the non-PC station and has a lower priority level than any data frame classified to a VUS/VSS; and

wherein the data frame is associated with an association identifier (AID) assigned for the non-PC station when the non-PC station is associated with the PC.

4. The method according to claim 1, wherein the CC frame is sent during a contention-free period (CFP) of a superframe that includes the contention-free period (CFP) and a contention period (CP).

5. The method according to claim 1, wherein the priority limit contained in the CC frame for the next CCI specifies a lowest priority level a data frame buffered at a non-PC station in the BSS must have for qualifying the non-PC station to send an RR frame for requesting transmission of the data frame.

6. The method according to claim 1, wherein the length of the next CCI is expressed in a number of CCOs contained in the next CCI.

7. The method according to claim 1, wherein the permission probability

associated with the next CCI specifies a probability number for statistically permitting a qualified non-PC station to send a RR frame.

8. The method according to claim 7, further comprising a step of determining the permission probability by dividing an available CCI length by a desirable CCI length calculated by a centralized contention algorithm, the desirable CCI length being a total CCI length that maximizes channel throughput for centralized contention by qualified non-PC stations in the next CCI.

9. The method according to claim 7, further comprising steps of:

receiving the CC frame at a non-PC station in the BSS; and

determining whether to send an RR frame in the next CCI based on the permission probability associated with the next CCI.

10. The method according to claim 9, wherein the step of determining whether to send an RR frame includes steps of:

generating a random number from a random variable uniformly distributed between 0 and 1 at the non-PC station;

comparing the random number to the permission probability; and

sending the RR when the random number is smaller than the permission

probability.

11. The method according to claim 1, wherein the information relating to a reservation request (RR) frame successfully received by the PC station in a previous CCI includes information relating to one of a VSID and an AID associating with the data frame for which the RR frame was sent.

12. The method according to claim 1, wherein the RR frame includes information relating to a size of data frames associated with one of a VSID and an AID and for which the RR frame was sent to the PC.

13. The method according to claim 1, wherein the RR frame includes information relating to one of a VSID and an AID associated with the data frame for which the RR frame was sent to the PC.

14. The method according to claim 1, wherein the wireless network is a wireless local area network (WLAN).

15. A method for providing quality of service (QoS)-driven channel access within a basic service set (BSS) in a wireless network, the method comprising steps of:

sending a contention control (CC) frame from a point coordinator (PC) station of the BSS, the CC frame containing information relating at least one of a priority limit for a next centralized contention interval (CCI), a length of the next CCI, a permission probability associated with the next CCI and information relating to a reservation request (RR) successfully received by the PC station in a previous CCI; and

receiving no RR frames at the PC in the CCI following the CC frame.

16. The method according to claim 15, wherein the step of receiving no RRs is because no RRs were sent in response to the CC frame.

17. The method according to claim 15, wherein the step of receiving no RRs is because all RRs sent in response to the CC frame collided.

18. The method according to claim 15, wherein the CC frame is sent during a contention-free period (CFP) of a superframe that includes the contention-free period (CFP) and a contention period (CP).

19. The method according to claim 15, wherein the priority limit contained in the CC frame for the next CCI specifies a lowest priority level a data frame buffered at a non-PC station in the BSS must have for qualifying the non-PC station to send an RR frame for



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requesting transmission of the data frame.

20. The method according to claim 15, wherein the length of the next CCI is expressed in a number of CCOs contained in the next CCI.

21. The method according to claim 15, wherein the permission probability associated with the next CCI specifies a probability number for statistically permitting a qualified non-PC station to send a RR frame.

22. The method according to claim 21, further comprising a step of determining the permission probability by dividing an available CCI length by a desirable CCI length calculated by a centralized contention algorithm, the desirable CCI length being a total CCI length that maximizes channel throughput for centralized contention by qualified non-PC stations in the next CCI.

23. The method according to claim 21, further comprising steps of:

receiving the CC frame at a non-PC station in the BSS; and

determining whether to send an RR frame in the next CCI based on the permission probability associated with the next CCI.

24. The method according to claim 23, wherein the step of determining whether to send an RR frame includes steps of:

generating a random number from a random variable uniformly distributed between 0 and 1 at the non-PC station;

comparing the random number to the permission probability; and

sending the RR when the random number is smaller than the permission probability.

25. The method according to claim 15, wherein the information relating to a reservation request (RR) frame successfully received by the PC station in a previous CCI includes information relating to one of a VSID and an AID associating with the data frame for which the RR frame was sent.

26. The method according to claim 15, wherein the RR frame includes information relating to a size of data frames associated with one of a VSID and an AID and for which the RR frame was sent to the PC.

27. The method according to claim 15, wherein the RR frame includes information relating to one of a VSID and an AID associated with the data frame for which the RR frame was sent to the PC.

28. The method according to claim 15, wherein the wireless network is a wireless local area network (WLAN).

29. A system for providing quality of service (QoS)-driven channel access within a basic service set (BSS) in a wireless network, the system comprising:

a point coordinator (PC) station in the BSS, the point coordinator station sending a contention control (CC) frame from a point coordinator (PC) of the BSS, the CC frame containing information relating to at least one of a priority limit for a next centralized contention interval (CCI), a length of the next CCI , a permission probability associated with the next CCI and information relating to a reservation request (RR) frame successfully received by the PC in a previous CCI; and

at least one non-PC station in the BSS sending a non-colliding RR frame to the PC in the CCI following the CC frame, a received RR frame being sent from a non-PC station in the BSS when at least one centralized contention opportunity (CCO) is available during the CCI after the CC frame, and an RR frame indicating that the non-PC station sending the RR frame has at least one buffered data frame for transmission.

30. The system according to claim 29, wherein the buffered data frame at a non-PC station is classified to one of a virtual up-stream and a virtual side-stream (VUS/VSS)

sourced by the non-PC station and has a priority level contained in a QoS parameter set characterizing the VUS/VSS; and

wherein the data frame is associated with a virtual stream identifier (VSID) assigned for the VUS/VSS when the VUS/VSS is admitted to the BSS.

31. The system according to claim 29, wherein the buffered data frame at a non-PC station belongs to best-effort/asynchronous traffic from the non-PC station and has a lower priority level than any data frame classified to a VUS/VSS; and

wherein the data frame is associated with an association identifier (AID) assigned for the non-PC station when the non-PC station is associated with the PC.

32. The system according to claim 29, wherein the CC frame is sent during a contention-free period (CFP) of a superframe that includes the contention-free period (CFP) and a contention period (CP).

33. The system according to claim 29, wherein the priority limit contained in the CC frame for the next CCI specifies a lowest priority level a data frame buffered at a non-PC station in the BSS must have for qualifying the non-PC station to send an RR frame for requesting transmission of the data frame.

34. The system according to claim 29, wherein the length of the next CCI is expressed in a number of CCOs contained in the next CCI.

35. The system according to claim 29, wherein the permission probability associated with the next CCI specifies a probability number for statistically permitting a qualified non-PC station to send an RR frame.

36. The system according to claim 35, wherein the PC station determines the permission probability by dividing an available CCI length by a desirable CCI length calculated by a centralized contention algorithm, the desirable CCI length being a total CCI length that maximizes channel throughput for centralized contention by qualified non-PC stations in the next CCI.

37. The system according to claim 35, wherein the non-PC station receives the CC frame and determines whether to send an RR frame in the next CCI based on the permission probability associated with the next CCI.

38. The system according to claim 37, wherein when the non-PC station determines whether to send an RR frame, the non-PC station generated a random number from a random variable uniformly distributed between 0 and 1 at the non-PC station,

compares the random number to the permission probability, and sends the RR when the random number is smaller than the permission probability.

39. The system according to claim 29, wherein the information relating to a reservation request (RR) frame successfully received by the PC station in a previous CCI includes information relating to one of a VSID and an AID associating with the data frame for which the RR frame was sent.

40. The system according to claim 29, wherein the RR frame includes information relating to a size of data frames associated with one of a VSID and an AID and for which the RR frame was sent to the PC.

41. The system according to claim 29, wherein the RR frame includes information relating to one of a VSID and an AID associated with the data frame for which the RR frame was sent to the PC.

42. The system according to claim 29, wherein the wireless network is a wireless local area network (WLAN).